Watershed Improvement Need Inventory (WINI)

Sierra National Forest

WINI Objective

- The original Watershed Improvement Need Inventory was deigned to develop a complete watershed analysis and improvement schedule for each NFS watershed (FSM 2522.21)

- The Inventory process has now become part of the watershed condition class assessment and uses watershed condition in conjunction with other resource conditions and with technical and economic feasibility to determine the need for management actions and treatments to help achieve goals and objectives (FSM 2521.11a).

WINI History on the Sierra National Forest

- The collection of WINI data began in the1980's.
- The WINI surveys included a systematic review of watershed resources including streams, meadows, and riparian areas.
- Reviews occurred each summer.
- Information was recorded on paper file forms.
- Between 1980 and 2008, approximately 1600 WINI sites were identified and recorded.
- Many of the sites have undergone restoration.

WINI History on the Sierra National Forest

- The WINI surveys evaluated impacts to watershed resources. Examples Include:
  - Road impacts to streams and meadows
  - Grazing impacts in riparian areas, in particular forest meadows
  - Cumulative watershed impacts from past land management activities

WINI History on the Sierra National Forest

- The WINI surveys recorded details on each erosional feature such as:
  - Dimensions of headcuts in stream channels and meadows
  - Size and extent of gully formation
  - Excessive sediment delivery from roads, trails, or other disturbed areas to sensitive riparian areas
  - Disruption of hydrologic connectivity in streams and meadows

WINI: State of the Data

- In 2008, the state of the WINI data consisted of thousands of paper field forms and photographs documenting the condition of WINI sites across the forest.
- The field forms were stored in binders, each cataloged using outdated watershed identifiers.
- Quickly and efficiently accessing WINI data was not possible.
- Many of the WINI sites had not be reviewed in decades and the data was out of date.

Whiskey Long Mdw

DATE: 11-3-92
REPORTED BY: Drivas

PROJECT ID# [illegible]
QUAD# 55143
Shuteye Pk. SW. ✓
Sanger 55196

SIERRA NATIONAL FOREST
WATERSHED IMPROVEMENT NEEDS (WINFORM)

PROBLEM NAME/LOCATION: Upper Whiskey - (West) Headwater Meadow to Whiskey Creek. Headcuts

NE 1/4, NW 1/4, SEC 26 T 7 R 23 MDBM PHOTO # _____
LATITUDE _____ LONGITUDE _____
DISTRICT Minarets NFS WATERSHED 1504
SIERRA SUB-WATERSHED 504.1006 STREAM # Unnumbered
TIMBER COMPARTMENT _____ GRAZING ALLOTMENT Haskell 05524
RIPARIAN ACRES _____ COST TO REPAIR _____

DESCRIPTION OF PROBLEM: 2 headcuts at beginning of meadow #1 headcut is very large and active. #2 is smaller, less active. #2 has a large fir tree helping to hold soil.

LAND USE

__ROADBED	X LOGGING	__DEVELOPED REC	__MINING	X GRAZING
__CUT/FILL SLOPE	__LANDING	__DISPERSED REC	__FIRE	__OHV
__CULVERT	__SKID TRAIL	__TRAIL	__OTHER	

NATURE OF PROBLEM

STREAM OR MEADOW
__BANK EROSION
X HEAD CUTTING/ DOWN CUTTING
__TRAMPLE AND CHISEL

ROAD
__GULLIED
__CUT OR FILL SLOPE FAILURE
__CULVERT

SOIL DISTURBANCE
__SOIL LOSS
__COMPACTION

__VEGETATION CHANGE/LOSS
E.G. WILLOWS HIGH-LINED

PROBLEM #	DIMENSIONS (E.G. AREA, HEADCUT FACE HEIGHT AND WIDTH)	TOTAL ESTIMATE OF MATERIAL MOVED LENGTH	X WIDTH	X DEPTH	= VOLUME
1	6'x 25'	100+	25.	6	15,000+
2	7'x 10'	30	10	2	600
3					
4					

PLEASE PUT PROBLEM SKETCHES AND ADDITIONAL INFORMATION ON BACK

Old WINI Form

WINI: Brought up to Modern Standards

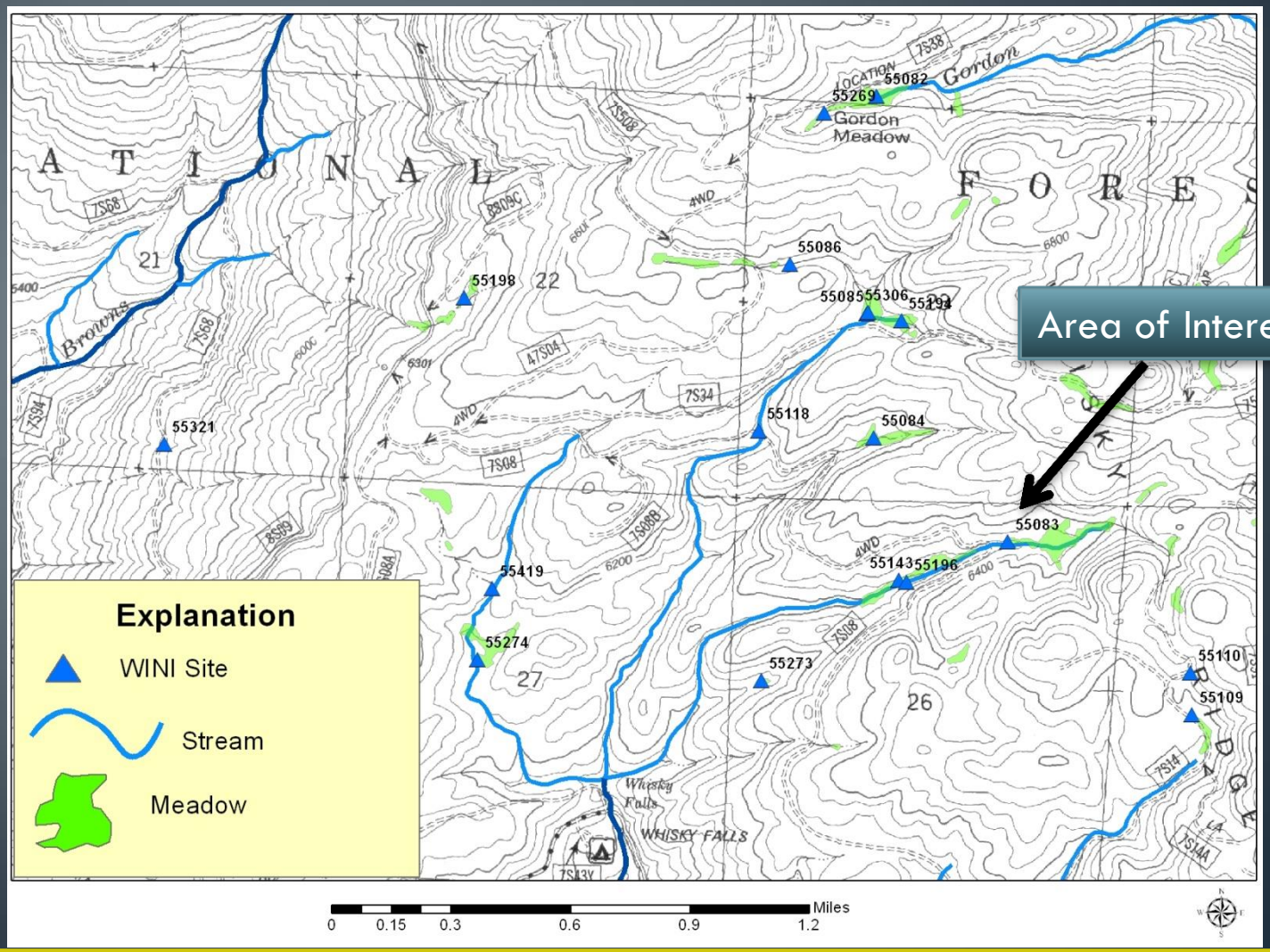
- None of the 1600 WINI reports or prescriptions were spatially referenced.
- In 2008-2009, a monumental effort was made to digitize all 1600 records and bring them into a spatially compatible format.
- An ArcGIS (ArcMap) geodatabase was developed to graphically display and store all the Forest's WINI data.

WINI: Brought up to Modern Standards

- In 2009, a WINI crew was tasked with reviewing the state of key WINI sites in high priority watersheds (e.g., South Fork Willow Creek).
- The objectives of the surveys were to evaluate the current condition of the WINI sites and rank the restoration priority.
- The updated data were used to refine the ArcGIS geodatabase.
- The surveys lasted through 2010.

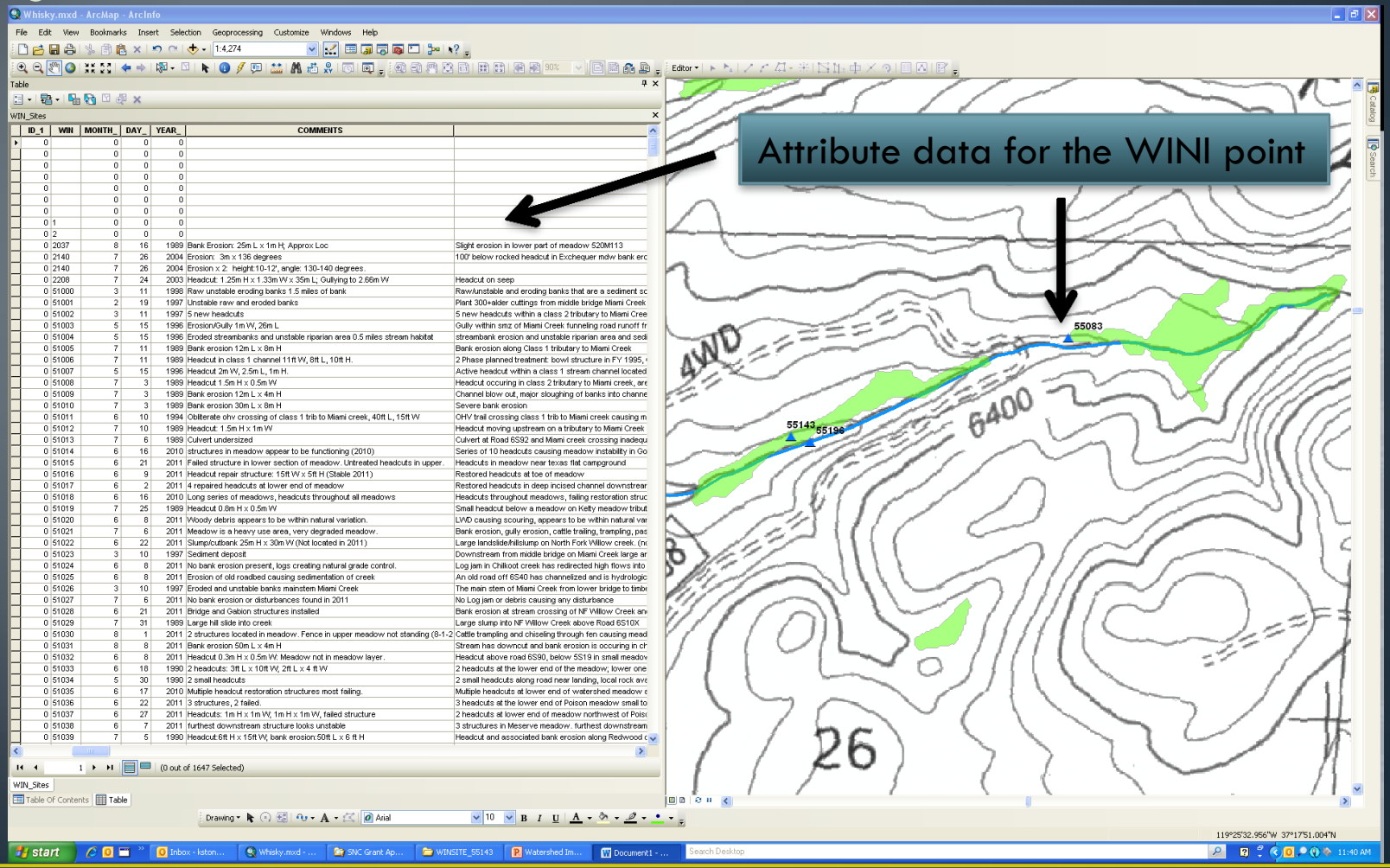
WINI of Today: The Geodatabase

- The current WINI geodatabase allows a graphic (spatial) view of all WINI sites on the forest



WINI of Today: The Geodatabase

- The current WINI geodatabase allows storage of all WINI data in an ArcMap attribute table, which is available at a glance.

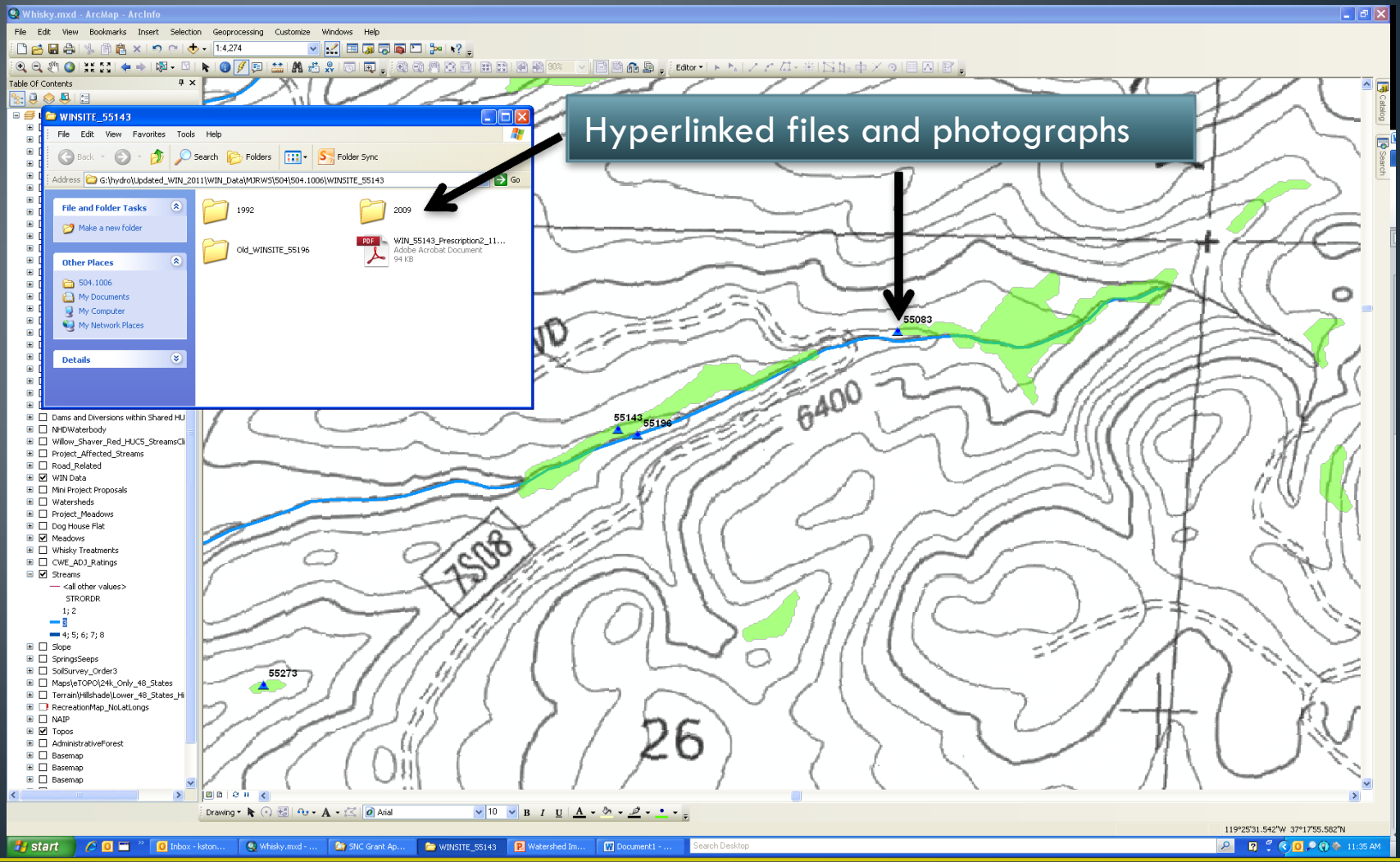


WINI of Today: The Geodatabase

- The current geodatabase allows WINI data to be hyperlinked to its original survey data and any updated data collected since 2009. This includes:
  - Original prescriptions and photographs
  - Restoration history and cost (if any)
  - Current condition of the WINI site including modern photographs
  - Restoration priority and prescriptions

WINI of Today: The Geodatabase

- Each WINI point on the map is hyperlinked to the data files, photographs, and restoration history associated with that site.



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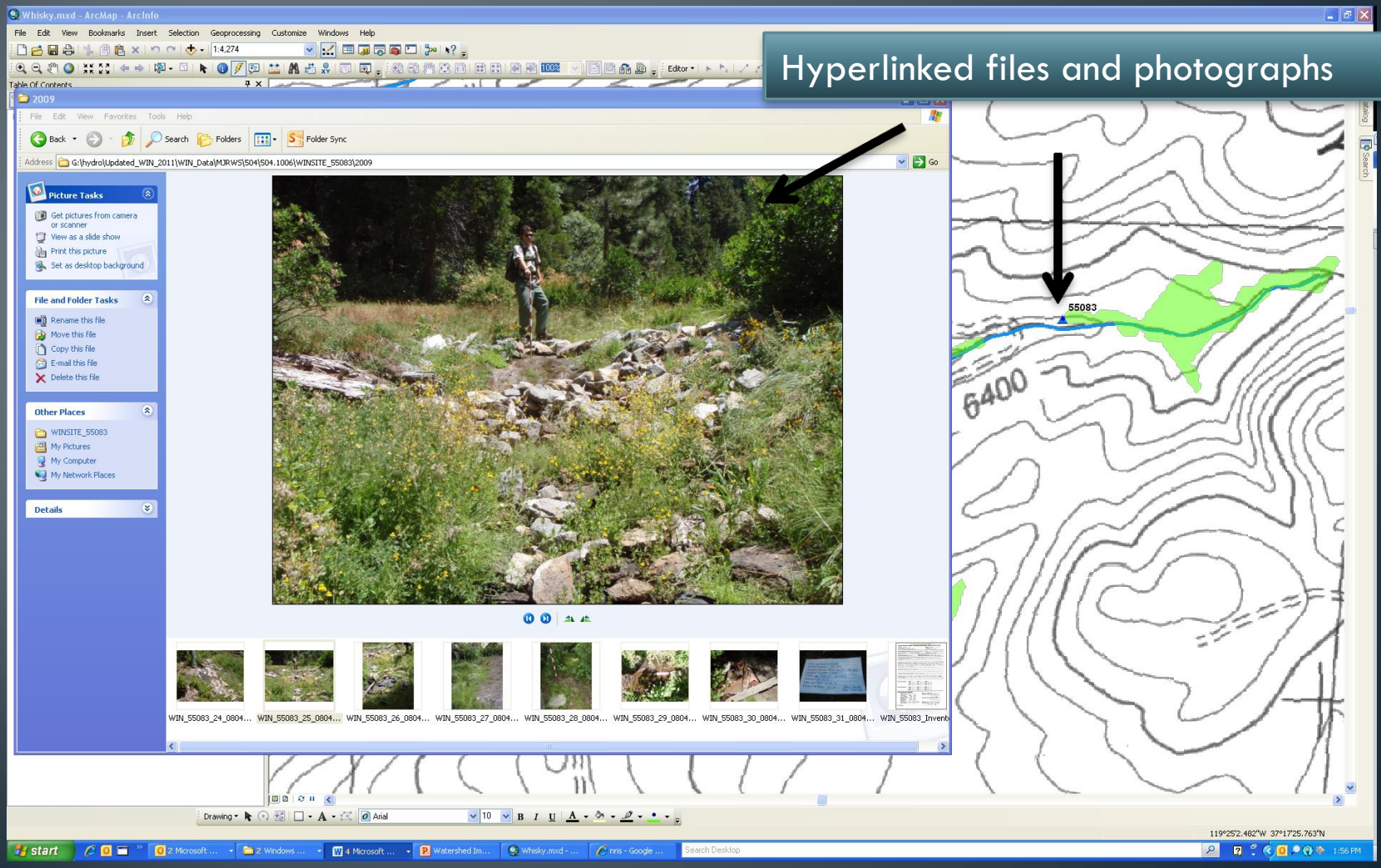

WINI of Today: Modern Data Collection and Management

- All new WINI site data are collected using a professional survey grade Trimble GeoXM GPS unit utilizing a comprehensive data dictionary.
- All new WINI sites are uploaded into the ArcGIS geodatabase annually.
- Any changes or updates to existing WINI sites are updated annually.
- All WINI data are uploaded annually into the National Watershed Improvement Tracking (WIT) and National Resources Information System (NRIS) databases.

WINI: Conclusions on the Current State of the Data

- The WINI surveys are a never ending part of the Forest's stewardship goals and the WINI data are an important tool to monitoring the watershed condition class status.

- Current methods for collection, storing and retrieving WINI data have been drastically streamlined by the ArcGIS geodatabase.

- Watershed condition assessment, Landscape Analysis, grant proposals, data sharing, FOIA requests, and NEPA analysis can accomplished more quickly, allowing for more "boots-on-the-ground" time for watershed restoration activities.

Questions?

- Please contact Keith Andy Stone, Sierra National Forest, Bass Lake District Hydrologist with any questions:
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